

(19)日本国特許庁 (JP)

(12) 公開特許公報 (A)

(11)特許出願公開番号

特開2000-159047

(P2000-159047A)

(43)公開日 平成12年6月13日 (2000.6.13)

(51)Int.Cl.⁷
B 6 0 R 21/20
B 2 9 C 51/10
51/12
B 6 0 K 37/00

識別記号

F I
B 6 0 R 21/20
B 2 9 C 51/10
51/12
B 6 0 K 37/00

テマコード⁸(参考)
3 D 0 4 4
3 D 0 5 4
4 F 2 0 8
B
J

審査請求 未請求 請求項の数2 O L (全7頁) 最終頁に続く

(21)出願番号 特願平10-340377

(22)出願日 平成10年11月30日 (1998.11.30)

(71)出願人 000119232

株式会社イノアックコーポレーション
愛知県名古屋市中村区名駅南2丁目13番4
号

(72)発明者 高橋 将之

愛知県安城市今池町3-1-36 株式会社
イノアックコーポレーション安城事業所内

(72)発明者 船戸 利恭

愛知県安城市今池町3-1-36 株式会社
イノアックコーポレーション安城事業所内

(74)代理人 100079050

弁理士 後藤 憲秋 (外1名)

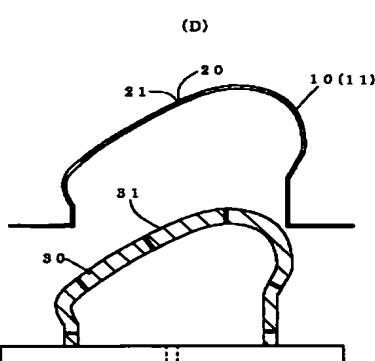
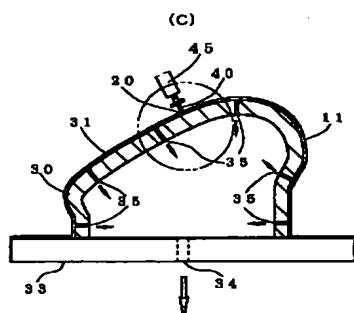
最終頁に続く

(54)【発明の名称】 エアバッグドア用開裂予定部を有する表皮の製造方法

(57)【要約】

【課題】 表皮の真空成形時に開裂予定部を効率良く形成でき、開裂予定部の形成に高価な装置が必要なく、経済的に表皮を製造できる方法を提供する。

【解決手段】 エアバッグドアを有する車室側部材のための表皮を真空成形する際、表皮用シート11を加熱軟化させて真空成形型30に吸引することによって賦形し、前記真空成形型30に表皮用シートを吸引保持した状態で当該表皮用シートの前記エアバッグドアに対する表皮10の開裂予定部20形成位置を加工刃40で押圧し、溝状の開裂予定部20を形成する。



【特許請求の範囲】

【請求項1】 エアバッグドアを有する車室側部材のための表皮を真空成形する際、表皮用シートを加熱軟化させて真空成形型に吸引することによって賦形し、前記真空成形型に表皮用シートを吸引保持した状態で当該表皮用シートの前記エアバッグドアに対する表皮の開裂予定部形成位置を加工刃で押圧し、溝状の開裂予定部を形成することを特徴とするエアバッグドア用開裂予定部を有する表皮の製造方法。

【請求項2】 エアバッグドアを有する車室側部材のための表皮を真空成形する際、

真空吸引用貫通孔が形成された基材を真空成形型の型面に保持し、表皮用シートを加熱軟化させて前記基材表面に接着剤を介して吸引することによって、前記表皮用シートを賦形するとともに基材と接着一体化し、前記真空成形型に基材及び表皮用シートを吸引保持した状態で当該表皮用シートの前記エアバッグドアに対する表皮の開裂予定部形成位置を加工刃で押圧し、溝状の開裂予定部を形成することを特徴とするエアバッグドア用開裂予定部を有する表皮の製造方法。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】 この発明はエアバッグドアを速やかに展開させるためのエアバッグドア用開裂予定部を有する表皮の製造方法に関する。

【0002】

【従来の技術】 最近、自動車には乗員を衝突時の衝撃から安全に保護するために、エアバッグ装置が設けられている場合がよくある。図8および図9に示す様に、このエアバッグ装置50は、例えば助手席側にあっては、インストルメントパネル等の車室側部材60の内部に設けられている。

【0003】 そして、自動車が衝突などにより大きな衝撃を受けた時には、エアバッグ装置50のインフレーターIが作動し、エアバッグドア収容ケース51内に収容されているエアバッグAが膨張し、エアバッグドア61を裏側から押し開いて車室内に展開する。

【0004】 前記エアバッグドア61は、平時、エアバッグ収容ケース51に蓋をして車室内の美観を向上させ、また衝撃時にエアバッグ収容ケース51を開いてエアバッグAが車室内に展開できるようにするものである。

【0005】 前記エアバッグドアを有する車室側部材としては、車室側部材の成形後にエアバッグドアを組み付ける後付けタイプと、車室側部材の製造時にエアバッグドアも一体に成形する一体成形タイプとがある。しかし、後付けタイプは、エアバッグドアを組み付ける作業が煩わしく、しかもその組み付け時のバラツキ等によってエアバッグドア周囲に見苦しい隙間を生じ易い問題等があるため、一体成形タイプが好んで用いられている。

る。前記車室側部材60はエアバッグドア一体成形タイプである。

【0006】 また、エアバッグドア一体成形タイプの車室側部材60には、この例のようにドア基材67の取り付けられたインストルメントパネル基材66と表皮62間で発泡体63を発泡成形したものと、図示しないが、表面の裏面に射出成形等によって直接インストルメントパネル基材やドア基材を成形したものとがある。さらに、前記表皮としては、塩化ビニル樹脂等からなる非発泡の合成樹脂シートから成形されたものと、非発泡の合成樹脂層の裏面に発泡層を有する複層の合成樹脂シートがある。いずれの場合であってもエアバッグ一体成形タイプの車室側部材においては、前記表皮62にあらかじめエアバッグドア61部分を画定する開裂予定部64が形成され、エアバッグドア61裏面がエアバッグAの膨張により押された際に、前記開裂予定部64に沿って車室側部材60が破断し、エアバッグドア61が開くようになる。なお、図示のものはエアバッグドアが両開きタイプのものであって、開裂予定部が平面視略H字形状になっているが、片開きの場合には平面視略コ字形状の開裂予定部とされる。

【0007】 前記表皮62の開裂予定部64は、前記エアバッグAの押圧によってスムーズに破断するように、溝やスリット等によって周囲より脆弱にされている。この開裂予定部64の形成は、公知のパウダースラッシュ成形や真空成形等により車室側部材形状に成形した合成樹脂製表皮を、受け治具の受け面に配置して開裂予定部形成位置を加工刃で押圧したり、また、レーザー加工によって溝やスリットを形成すること等により行われている。

【0008】 ところが、この様な開裂予定部の形成は、表皮の成形後、独立した別の工程で行われるため面倒であるのみならず、レーザー加工の場合には高価な装置も必要なため、表皮のコストが上昇するという問題がある。また、前記開裂予定部は、1mm厚程度の表皮に対し約0.5ないし0.7mmの深さの溝状とされるため、該開裂予定部の形成作業を慎重に行わなければならなかった。しかも、加工刃の押圧によって表皮の開裂予定部を形成する場合には、表皮が受け治具の受け面で滑ってずれ易く、所定の開裂予定部を正確かつ一定して形成しにくい問題がある。

【0009】

【発明が解決しようとする課題】 この発明は前記の問題点に鑑みてなされたもので、表皮の真空成形時に開裂予定部を効率良く形成でき、しかも開裂予定部の形成に高価な装置が必要なく、経済的に表皮を製造できる方法を提供するものである。

【0010】

【課題を解決するための手段】 すなわち、請求項1の発明は、エアバッグドアを有する車室側部材のための表皮

を真空成形する際、表皮用シートを加熱軟化させて真空成形型に吸引することによって賦形し、前記真空成形型に表皮用シートを吸引保持した状態で当該表皮用シートの前記エアバッグドアに対する表皮の開裂予定部形成位置を加工刃で押圧し、溝状の開裂予定部を形成することを特徴とするエアバッグドア用開裂予定部を有する表皮の製造方法に係る。

【0011】また、請求項2の発明は、エアバッグドアを有する車室側部材のための表皮を真空成形する際、真空吸引用貫通孔が形成された基材を真空成形型の型面に保持し、表皮用シートを加熱軟化させて前記基材表面に接着剤を介して吸引することによって、前記表皮用シートを賦形するとともに基材と接着一体化し、前記真空成形型に基材及び表皮用シートを吸引保持した状態で当該表皮用シートの前記エアバッグドアに対する表皮の開裂予定部形成位置を加工刃で押圧し、溝状の開裂予定部を形成することを特徴とするエアバッグドア用開裂予定部を有する表皮の製造方法に係る。

【0012】

【発明の実施の形態】以下添付の図面に従ってこの発明を詳細に説明する。図1はこの発明の一実施例における真空成形時の加熱工程と賦形工程を示す断面図、図2は加工刃による押圧工程と脱型工程を示す断面図、図3は加工刃による押圧時の拡大断面図、図4はこの発明のその他の例における真空成形時の基材配置工程から賦形工程を示す断面図、図5は加工刃による押圧工程と脱型工程を示す断面図、図6はトリミング工程を示す断面図、図7は加工刃による押圧時の拡大断面図である。

【0013】この発明は、エアバッグドア一体成形タイプの車室側部材に用いられる表皮の製造方法に関し、以下に詳述するように表皮を真空成形する際にエアバッグドア用開裂予定部を形成するものである。なお、以下の実施例は、先に従来技術の項で説明した図8と同様の外形からなるインストルメントパネル用表皮を製造する例であり、エアバッグドアに対する開裂予定部は前記のように略H字形あるいは略コ字形等、適宜の形状に形成される。また、インストルメントパネル（車室側部材）は、前記のように表皮とインストルメントパネル基材間で発泡体が成形されるもの、あるいはインストルメントパネル基材の表面に直接表皮が積層されるもののいずれであってもよい。

【0014】まず、図1の（A）に示すように、表皮用シート11の加熱工程を行う。この工程では、表皮用シート11をヒーター等の加熱手段Mで加熱軟化させて賦形可能な状態とする。表皮用シート11は、加熱により軟化して賦形可能になる熱可塑性合成樹脂からなり、例えば、軟質塩化ビニル樹脂やポリオレフィン樹脂等からなる非発泡の合成樹脂シート、あるいはポリオレフィン系熱可塑性エラストマー（TPO）等からなる非発泡層の裏面にポリエチレン発泡体等からなる発泡層を有する

複層合成樹脂シート等、適宜の材質が選択される。この例の表皮用シート11は、厚み0.6mmのポリオレフィン系熱可塑性エラストマーからなる非発泡層12の裏面に、厚み1.0mmのポリエチレン発泡層13（図3に示す）を有する二層構造のものである。

【0015】次いで、図1の（B）に示すように賦形工程を行う。この賦形工程では、前記加熱軟化した表皮用シート11を、真空成形型30の型面31に真空吸引して真空成形型30の型面31形状に賦形する。真空成形型31は、目的とする車室側部材の外形に応じた形状の型面31を有し、その型面31に多数の吸引孔35、35、…が形成されている。前記型面の吸引孔35は、台部33の吸引口34を介して真空吸引装置（図示せず）に通じ、その真空吸引装置の作動により型面31と表皮用シート11間を減圧にして表皮用シート11を型面31に吸着する。

【0016】続いて図2の（C）に示すように加工刃40による押圧工程を行う。この工程では、前記表皮用シート11の賦形後、該表皮用シート11が未だ真空成形型30に吸引保持されている状態で、加工刃40を表皮用シート11の表面における表皮10の開裂予定部20形成位置に押圧し、開裂予定部20形成位置に断面略V字形の溝からなる開裂予定部20を形成する。その際、表皮用シート11は真空成形型30に吸引保持されているため、加工刃40で押圧しても表皮用シート11が位置されせず、正確に押圧でき、一定の開裂予定部20を形成できる。開裂予定部20の深さは、表皮用シート11の厚みや材質によっても異なるが、この例では0.3mmとされる。

【0017】この加工刃40による押圧は、表皮用シート11が賦形直後のまだ十分に温度が高い軟化状態の時点で行うのが好ましい。軟化している表皮用シート11は加工がし易いため、強く押圧しなくとも溝21が形成されるとともに、薄肉とする開裂予定部20の微妙な厚み調節が容易になる。

【0018】なお、加工刃40は、先端の刃先41の厚みが厚すぎると、表皮用シート11表面の押圧部両側、すなわち開裂予定部の両側に沿って土手状の盛り上がりを生じ易く、得られる表皮の開裂予定部の外観が損なわれるため、0.4mm～0.8mm程度の細い刃先41にするのが好ましい。また、加工刃40はその刃先41が開裂予定部20の形状に応じて略H字形あるいは略コ字形等とされ、エアあるいは油圧シリンダー装置等の作動装置45で表皮用シート11の開裂予定部20形成位置に向けて前進後退可能とされる。さらに、加工刃の刃先が連続してなく、のこぎりの歯のように凹凸のあるものとして、薄肉部が断続する溝状開裂予定部としてもよい。

【0019】次いで、前記表皮用シート11が自然冷却あるいは冷風や冷水の吹き付け等による強制冷却によっ

て形状が固定された後、図2の(D)に示すように表皮用シート11を真空成形型30の型面31から剥がす脱型工程を行い、その後必要に応じて表皮用シート11の不要部をトリミングして所望の表皮10を得る。このようにして得られた表皮10は、所要形状に賦形されていると共に、エアバッグドアに対応する開裂予定部20を有しており、従来のように後加工によって開裂予定部20を形成する必要がない。

【0020】前記のようにして成形された表皮10は、その後車室側部材の成形に供される。その際、車室側部材が表皮10と、ドア基材の取り付けられたインストルメントパネル基材間に発泡体を有する構造の場合には、発泡成形型に前記表皮と、ドア基材の取り付けられたインストルメントパネル基材をセットし、表皮10とインストルメントパネル基材間に発泡原料を注入し発泡させることによって車室側部材が成形される。

【0021】また、本発明のその他の実施例として、開裂予定部を有する表皮を基材と一体に成形する場合を図4ないし図7に従って説明する。なお、基材は、あらかじめ射出成形等によって所定形状に成形されたものであって、図示しないがインストルメントパネル基材の一部にスリットやノッチ等によって略U字形あるいはH字形等にエアバッグドア基材部分が区画形成されたもの、あるいはインストルメントパネル基材にエアバッグ開口部が形成され、該開口部にエアバッグドア基材が開閉可能に取り付けられたもの等、適宜のものが用いられる。

【0022】まず、図4の(A)に示すように、真空吸引用貫通孔15が形成されている基材14を真空成形型30aの型面31aに保持する基材配置工程を行う。基材14は真空成形型30aの所定の位置に配置されて型面31aに保持される。基材14に形成されている該真空吸引用貫通孔15は、真空成形型30aの型面31aに形成されている真空吸引孔35aと対応する位置や、その他適宜の位置に設けることが望ましい。また、基材14の表面には接着剤が塗布され、後述する表皮用シートが基材14と接着できるようにされる。

【0023】次に、図4の(B)に示すように、表皮用シート11aの加熱工程を行う。表皮用シート11aをヒーター等の加熱手段Mで加熱軟化させて賦形可能な状態とする。表皮用シート11aは、前記した実施例と同様の原料および構造のものを使用している。

【0024】次いで、表皮用シート11aの賦形工程を行う。賦形工程では、加熱軟化した表皮用シート11aを、前記真空成形型30aの基材14表面に真空吸引して吸着させ、基材14の表面形状に賦形する。真空吸引装置(図示せず)は基材14の真空吸引貫通孔15および真空成形型31aの真空吸引孔35に通じ、その装置の作動により型面31aと基材14間および基材14表面と表皮用シート11aの間を減圧し、基材14を型面31aにまた表皮用シート11aを基材14表面に吸着

している。さらに、この吸着によって表皮用シート11aは、基材14表面の接着剤を介して基材14と接着一体化する。なお、符号33aは真空成形型の台部、符号34aは真空吸引装置に通じる吸引口である。

【0025】続いて、図5の(C)およびその一部を拡大する図7に示すように加工刃40aによる押圧工程を行う。この工程では、前記真空成形型30aに基材14及び表皮用シート11aを吸引保持した状態で、前記実施例と同様に、賦形された表皮用シート11aの表面における表皮の開裂予定部形成位置に加工刃40aを押圧し、開裂予定部形成位置に断面略V字形の溝からなる開裂予定部20aを形成する。その際、基材14及び表皮用シート11aは真空成形型30aの型面31aに吸引保持され、さらに基材14と表皮用シート11aは接着一体化しているため、表皮10aがずれることなく正確な位置に加工刃40aを押圧でき、一定位置に開裂予定部20aを形成できる。また、賦形直後の未だ柔らかい表皮用シート11aに対して加工刃による押圧を行えば、強く押圧しなくとも溝21aが形成され、薄肉の開裂予定部20aの微妙な厚み調節が容易になる。

【0026】次に、前記基材14表面の表皮用シート11aが強制冷却によって形状固定された後、図5の(D)に示すように真空成形型30aの型面31aから剥がす脱型工程を行い、図6に示すように不要部分16のトリミング工程を必要に応じて行う。このようにして、基材14と一体になった所望の表皮10aを得る。

【0027】【発明の効果】以上、図示し説明したように、本発明のエアバッグドア用開裂予定部を有する表皮の製造方法によれば、表皮を賦形するための真空成形の工程で、加工刃を用いて開裂予定部を成形するため、表皮成形後の余分な後工程によって開裂予定部を形成する必要がなくコストを抑えることができ効率もよくなる。

【0028】さらに、真空成形時に基材と接着一体化した表皮用シートに対して開裂予定部を形成しているため、基材に対する開裂予定部の位置も考慮して表皮を一体化することができ、後工程との際に表皮と基材を一体化するものに比べてより開裂予定部の成形位置が正確に行え、作業も簡単に行える。

【0029】しかも、本発明によれば、レーザー加工のような高価、複雑な装置を必要としないため、経済的である。さらに、表皮用シートを真空成形型に吸引保持した状態で加工刃により押圧して開裂予定部を形成するため、開裂予定部形成時に表皮用シートが位置ずれせず、開裂予定部を所定の位置に正確に形成できる。

【図面の簡単な説明】

【図1】この発明の一実施例における真空成形時の加熱工程と賦形工程を示す断面図である。

【図2】加工刃による押圧工程と脱型工程を示す断面図である。

【図3】加工刃による押圧時の拡大断面図である。

【図4】その他の実施例における真空成形時の基材配置工程と加熱工程と賦形工程を示す断面図である。

【図5】加工刃による押圧工程と脱型工程を示す断面図である。

【図6】トリミング工程を示す断面図である。

【図7】加工刃による押圧時の拡大断面図である。

【図8】従来の開裂予定部が形成されたインストルメン

トパネルを示す斜視図である。

【図9】図8の9-9線における断面図である。

【符号の説明】

* 10, 10a 表皮

11, 11a 表皮用シート

14 基材

15 真空吸引貫通孔

20, 20a エアバッグドア用開裂予定部

21, 21a 溝

30, 30a 真空成形型

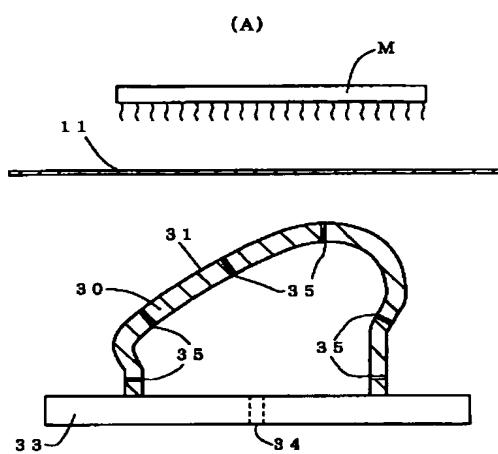
31, 31a 真空成形型面

40, 41a 加工刃

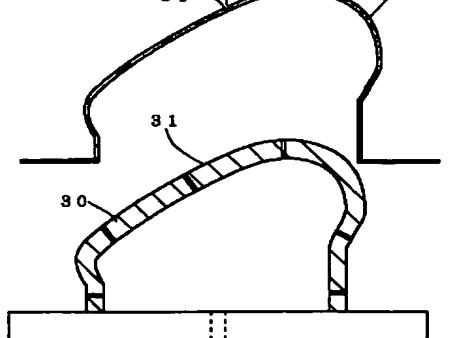
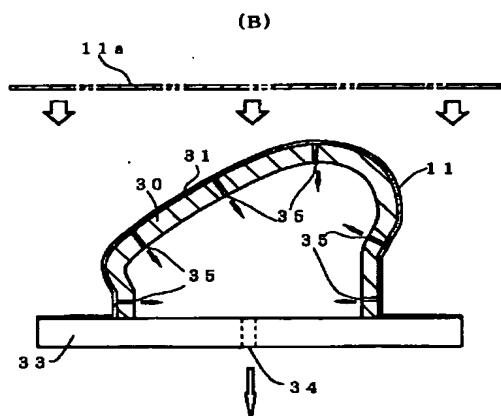
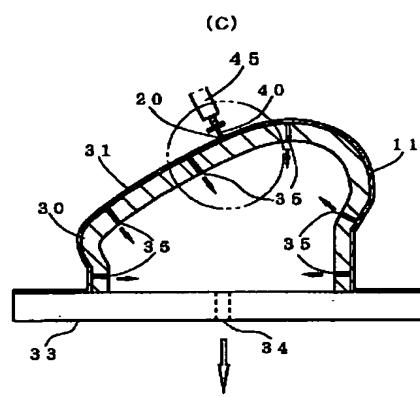
10 41 刃先

* A エアバッグ

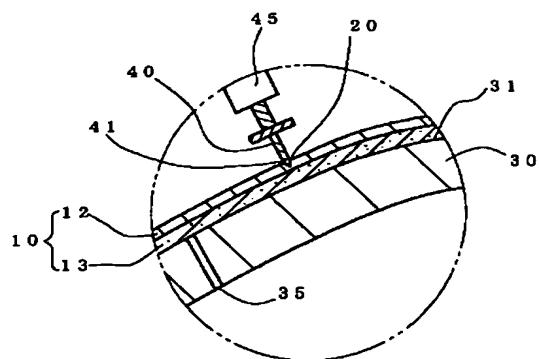
【図1】



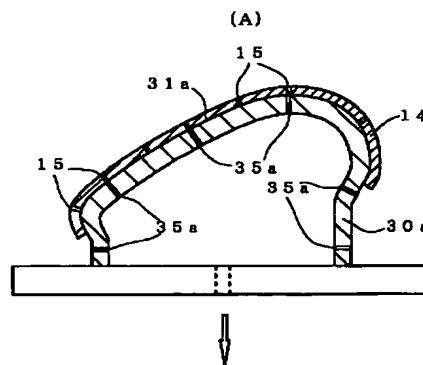
【図2】



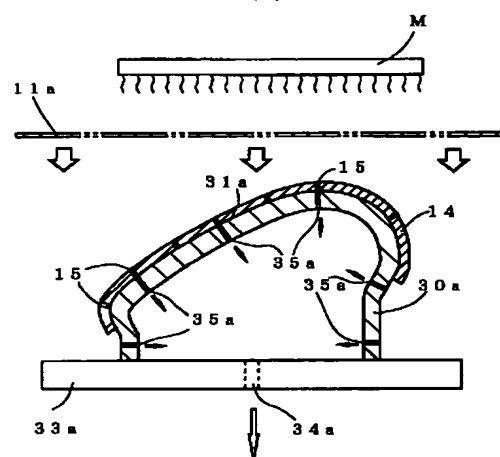
【図3】



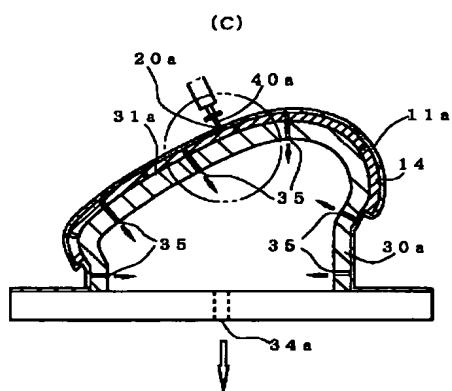
【図4】



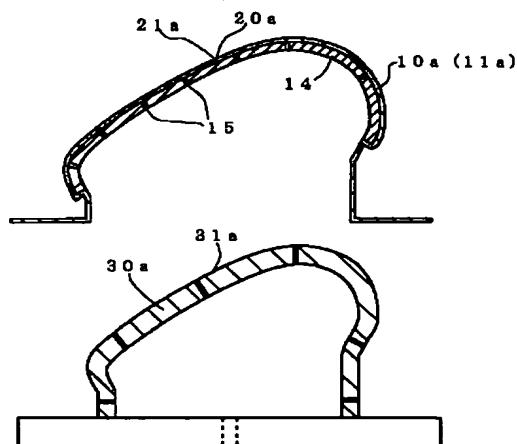
(B)



【図5】

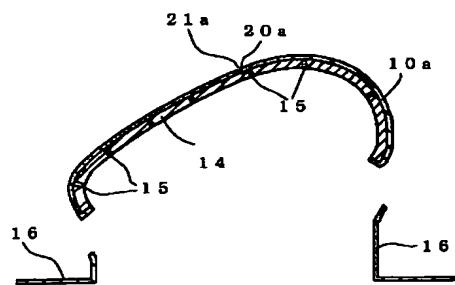


(D)

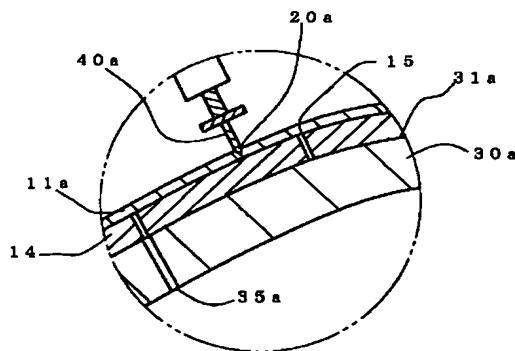


【図6】

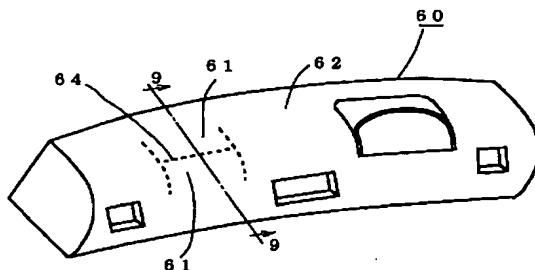
(E)



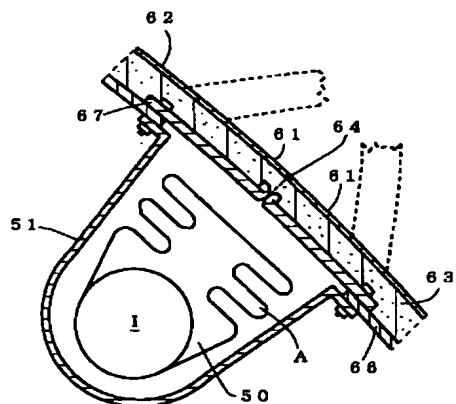
【図7】



【図8】



【図9】



フロントページの続き

(51) Int. Cl. ⁷

識別記号

F I

テーマコード (参考)

// B 2 9 L 7:00

9:00

31:00

(72) 発明者 久留 智和

愛知県安城市今池町3-1-36 株式会社

イノアックコーポレーション安城事業所内

F ターム (参考) 3D044 BA07 BA11 BB01 BC03 BC04

BD04

3D054 AA03 AA14 BB09 BB10 BB16
BB23 BB30 FF17

4F208 AD05 AD08 AH17 MA01 MB01
MB11 MC02 MJ05 MW01 MW21

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2000-159047
 (43)Date of publication of application : 13.06.2000

(51)Int.Cl. B60R 21/20
 B29C 51/10
 B29C 51/12
 B60K 37/00
 // B29L 7:00
 B29L 9:00
 B29L 31:00

(21)Application number : 10-340377
 (22)Date of filing : 30.11.1998

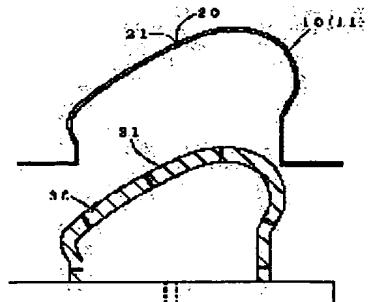
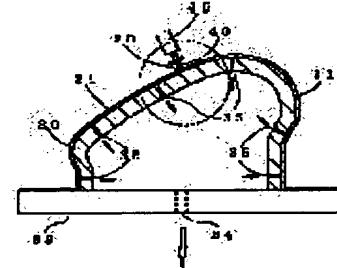
(71)Applicant : INOAC CORP
 (72)Inventor : TAKAHASHI MASAYUKI
 FUNATO TOSHIKAZA
 KUDOME TOMOKAZU

(54) MANUFACTURE OF SURFACE SKIN HAVING CLEAVAGE-EXPECTED PART FOR AIR BAG DOOR

(57)Abstract:

PROBLEM TO BE SOLVED: To establish an economical manufacturing method for a surface skin allowing effective formation of a cleavage-expected part when the surface skin is formed by vacuum molding and not requiring any expensive device for formation of the cleavage-expected part.

SOLUTION: When a surface skin for a cabin side member having an air bag door is to be formed by vacuum molding, a surface sheet 11 is heated for softening and sucked to a die 30 for giving the intended shape, and in this sucked and held condition, the position on the surface skin 10 where a cleavage-expected part 20 is provided relative to the air bag door of the surface sheet is pressed by a processing cutter blade 40, and thus the groove-shaped cleavage-expected part 20 is formed.



* NOTICES *

JPO and INPIT are not responsible for any damages caused by the use of this translation.

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.**** shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]

[Claim 1]When vacuum forming of the epidermis for vehicle room back members which have an air bag door is carried out, Size enlargement is carried out by carrying out heat softening of the sheet for epidermis, and attracting it to a vacuum forming type, A manufacturing method of epidermis which has a cleavage programmed part for air bag doors pressing a cleavage programmed part formation position of epidermis to said air bag door of the sheet for epidermis concerned with a processing edge where suction holding of the sheet for epidermis is carried out to said vacuum forming type, and forming a grooved cleavage programmed part.

[Claim 2]By holding a substrate with which a breakthrough for vacuum suction was formed to a vacuum forming type mold face, carrying out heat softening of the sheet for epidermis, and attracting it via adhesives to said base material surface, when carrying out vacuum forming of the epidermis for vehicle room back members which have an air bag door, While carrying out size enlargement of said sheet for epidermis, carry out adhesion unification with a substrate, and where suction holding of a substrate and the sheet for epidermis is carried out to said vacuum forming type, a cleavage programmed part formation position of epidermis to said air bag door of the sheet for epidermis concerned is pressed with a processing edge, A manufacturing method of epidermis which has a cleavage programmed part for air bag doors forming a grooved cleavage programmed part.

[Translation done.]

* NOTICES *

JPO and INPIT are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the manufacturing method of the epidermis which has a cleavage programmed part for air bag doors for developing an air bag door promptly.

[0002]

[Description of the Prior Art] These days, in order to take care of a crew member safely from the shock at the time of a collision, there is often a case where the air bag device is formed in a car. As shown in drawing 8 and drawing 9, if this air bag device 50 is in a passenger side, for example, it is formed in the inside of the vehicle room back members 60, such as an instrument panel.

[0003] And when a car gets a big shock by collision etc., the inflator I of the air bag device 50 operates, the air bag A accommodated in the air bag door accommodation case 51 expands, the air bag door 61 is pushed open from the back side, and it develops to the vehicle interior of a room.

[0004] Said air bag door 61 covers time of peace and the air bag accommodation case 51, and raises the fine sight of the car interior of a room, and opens the air bag accommodation case 51 at the time of a shock, and the air bag A enables it to develop it to the vehicle interior of a room.

[0005] As vehicle room back members which have said air bag door, there are a type for post-installation which attaches an air bag bag door after shaping of vehicle room back members, and an integral-moulding type which an air bag door also fabricates to one at the time of manufacture of vehicle room back members. However, a type for post-installation has the troublesome work which attaches an air bag door, and since there are a problem etc. which are moreover easy to produce an unsightly crevice to the circumference of an air bag door by the variation at the time of the attachment, etc., an integral-moulding type likes it and it is used. Said vehicle room back members 60 are air bag door integral-moulding types.

[0006] To the air bag door integral-moulding type vehicle room back members 60. There are what carried out foaming of the foam 63 to the instrument-panel substrate 66 with which the door base material 67 was attached like this example between the epidermis 62, and a thing which fabricated the direct instrument-panel substrate and the door base material by injection molding etc. at the surface rear face although not illustrated. The rear face of what was fabricated as said epidermis from the plastic sheet of not foaming [which consists of vinyl chloride resin etc.], and a non-foaming synthetic resin layer has a plastic sheet of the double layer which has a foaming layer. In [even if it is which case] air bag integral-moulding type vehicle room back members, When the cleavage programmed part 64 which demarcates air bag door 61 portion beforehand is formed in said epidermis 62 and air bag door 61 rear face is pushed on it by expansion of the air bag A, the vehicle room back members 60 fracture along with said cleavage programmed part 64, and the air bag door 61 is opened. Although an air bag door is a double door type thing and the cleavage programmed part has become plane view abbreviation zygial-like, in a piece difference, let the thing of a graphic display be a plane view abbreviation KO type-like cleavage programmed part.

[0007] The cleavage programmed part 64 of said epidermis 62 is made more nearly vulnerable than the circumference by a slot, slit, etc. so that it may fracture smoothly by press of said air bag A. Formation of this cleavage programmed part 64 the synthetic resin tabulation hide fabricated in vehicle room back-members shape with publicly known powder slush molding, vacuum forming, etc.. It arranges to the receptacle side of a receptacle jig, and is carried out by pressing a cleavage programmed part formation position with a processing edge, and forming a slot and a slit with laser processing etc.

[0008] However, it is not only troublesome, but [since formation of such a cleavage programmed part is performed at another independent process after shaping of epidermis,] since an expensive device is also required in the case of laser processing, there is a problem that the cost of epidermis goes up. Since said

cleavage programmed part was made into an about 0.5 thru/or 0.7 mm-deep groove to the epidermis about 1-mm thickness, it had to perform forming working of this cleavage programmed part carefully. And in forming the cleavage programmed part of epidermis by press of a processing edge, epidermis wins popularity, and it slides in respect of the receptacle of a jig, and is easy to shift, and there are exact and a problem which is fixed and is hard to form about a predetermined cleavage programmed part.

[0009]

[Problem(s) to be Solved by the Invention] This invention was made in view of the aforementioned problem, can form a cleavage programmed part efficiently at the time of the vacuum forming of epidermis, and moreover its device expensive to formation of a cleavage programmed part is unnecessary, and it provides the method that epidermis can be manufactured economically.

[0010]

[Means for Solving the Problem] Namely, when an invention of claim 1 carries out vacuum forming of the epidermis for vehicle room back members which have an air bag door, Size enlargement is carried out by carrying out heat softening of the sheet for epidermis, and attracting it to a vacuum forming type, Where suction holding of the sheet for epidermis is carried out to said vacuum forming type, a cleavage programmed part formation position of epidermis to said air bag door of the sheet for epidermis concerned is pressed with a processing edge, and a manufacturing method of epidermis which has a cleavage programmed part for air bag doors forming a grooved cleavage programmed part is started.

[0011] When an invention of claim 2 carries out vacuum forming of the epidermis for vehicle room back members which have an air bag door, By holding a substrate with which a breakthrough for vacuum suction was formed to a vacuum forming type mold face, carrying out heat softening of the sheet for epidermis, and attracting it via adhesives to said base material surface, While carrying out size enlargement of said sheet for epidermis, carry out adhesion unification with a substrate, and where suction holding of a substrate and the sheet for epidermis is carried out to said vacuum forming type, a cleavage programmed part formation position of epidermis to said air bag door of the sheet for epidermis concerned is pressed with a processing edge, A manufacturing method of epidermis which has a cleavage programmed part for air bag doors forming a grooved cleavage programmed part is started.

[0012]

[Embodiment of the Invention] According to an attached drawing, this invention is explained in detail below. The sectional view showing the heating process and size enlargement process at the time of vacuum forming [in / in drawing 1 / one example of this invention], The sectional view showing a pressing process and an unmolding process according [drawing 2] to a processing edge, the expanded sectional view at the time of press according [drawing 3] to a processing edge, The sectional view showing a size enlargement process from the substrate arrangement process at the time of vacuum forming [in / in drawing 4 / the example of others of this invention], the sectional view showing a pressing process and an unmolding process according [drawing 5] to a processing edge, the sectional view in which drawing 6 shows a trimming process, and drawing 7 are the expanded sectional views at the time of the press with a processing edge.

[0013] When this invention carries out vacuum forming of the epidermis about the manufacturing method of epidermis used for air bag door integral-moulding type vehicle room back members so that it may explain in full detail below, it forms the cleavage programmed part for air bag doors. The following examples are examples which manufacture the epidermis for instrument panels which consists of the same outside as drawing 8 previously explained by the paragraph of conventional technology, and the cleavage programmed part to an air bag door is formed in proper shape, such as approximately zygial or approximately KO type, as mentioned above. Instrument panels (vehicle room back members) may be any although epidermis is directly laminated by the surface of the thing by which foam is fabricated between epidermis and an instrument-panel substrate as mentioned above, or an instrument-panel substrate.

[0014] First, as shown in (A) of drawing 1, the heating process of the sheet 11 for epidermis is performed. In this process, heat softening of the sheet 11 for epidermis is carried out by the heating method M of a heater etc., and it changes into the state in which size enlargement is possible. The sheet 11 for epidermis consists of thermoplastic synthetic resin which becomes soft with heating and whose size enlargement becomes possible, For example, proper construction material, such as a double layer plastic sheet which has a foaming layer which consists of polyethylene foam etc., is chosen as the rear face of the non-foaming layer which consists of a plastic sheet or polyolefin system thermoplastic elastomer (TPO) of not foaming [which consists of soft polyvinylchloride resin, polyolefin resin, etc.] etc. The sheet 11 for epidermis of this example is a thing of the two-layer structure which has the 1.0-mm-thick polyethylene foaming layer

13 (shown in drawing 3) at the rear face of the non-foaming layer 12 which consists of 0.6-mm-thick polyolefin system thermoplastic elastomer.

[0015] Subsequently, as shown in (B) of drawing 1, a size enlargement process is performed. In this size enlargement process, vacuum suction of said sheet 11 for epidermis which carried out heat softening is carried out to the mold face 31 of vacuum forming type 30, and size enlargement is carried out to mold face 31 shape of vacuum forming type 30. Vacuum forming type 31 has the mold face 31 of shape according to the outside of the vehicle room back members made into the purpose, and many suction holes 35 and 35 and -- are formed in the mold face 31. The suction hole 35 of said mold face makes decompression between the mold face 31 and the sheet 11 for epidermis by the operation of the vacuum sucking device through a vacuum sucking device (not shown) via the suction opening 34 of the rest 33, and adsorbs the sheet 11 for epidermis in the mold face 31.

[0016] Then, as shown in (C) of drawing 2, a pressing process with the processing edge 40 is performed. In this process, in the state where suction holding of this sheet 11 for epidermis is still carried out to vacuum forming type 30 after the size enlargement of said sheet 11 for epidermis. The processing edge 40 is pressed to cleavage programmed part 20 formation position of the epidermis 10 in the surface of the sheet 11 for epidermis, and the cleavage programmed part 20 which consists of a slot of section abbreviation V type is formed in cleavage programmed part 20 formation position. Since suction holding of the sheet 11 for epidermis is carried out to vacuum forming type 30 in that case, even if it presses with the processing edge 40, the sheet 11 for epidermis cannot carry out a position gap, but can press correctly, and can form the fixed cleavage programmed part 20. Although the depth of the cleavage programmed part 20 changes also with the thickness and construction material of the sheet 11 for epidermis, it shall be 0.3 mm in this example.

[0017] As for the press with this processing edge 40, it is preferred to carry out, when the sheet 11 for epidermis is a softened state with a temperature high still sufficiently just behind size enlargement. While the slot 21 is formed even if it does not press strongly in order that the softened sheet 11 for epidermis may tend to carry out processing, the delicate thickness regulation of the cleavage programmed part 20 used as thin meat becomes easy.

[0018] Since the appearance of the cleavage programmed part of the epidermis obtained by being easy to produce climax of the shape of a bank along with the pressing part both sides of the sheet 11 surface for epidermis, i.e., the both sides of a cleavage programmed part, will be spoiled if the processing edge 40 has too thick the thickness of the edge of a blade 41 at a tip. It is preferred to use the thin edge of a blade 41 about 0.4 mm - 0.8-mm thickness. The edge of a blade 41 is made into approximately zygial or approximately KO type according to the shape of the cleavage programmed part 20, and the moved back of the processing edge 40 is made possible towards cleavage programmed part 20 formation position of the sheet 11 for epidermis with the starting devices 45, such as air or a hydraulic cylinder device. It is good also as a grooved cleavage programmed part to which a thin-walled part is intermittent as that where the edge of a blade of a processing edge is not continuing and which is irregular like the gear tooth of a saw.

[0019] Subsequently, after shape was fixed by forced cooling according [said sheet 11 for epidermis] to natural air cooling or cold blast, spraying of chilled water, etc., As shown in (D) of drawing 2, the unmolding process of removing the sheet 11 for epidermis from the mold face 31 of vacuum forming type 30 is performed, trimming of the unnecessary part of the sheet 11 for epidermis is carried out if needed after that, and the desired epidermis 10 is obtained. Thus, size enlargement of the obtained epidermis 10 is carried out to required shape, and it has the cleavage programmed part 20 corresponding to an air bag door, and does not need to form the cleavage programmed part 20 by post processing like before.

[0020] Shaping of the rear vehicle room back members is presented with the epidermis 10 fabricated as mentioned above. In the case of the structure where vehicle room back members have foam between the epidermis 10 and the instrument-panel substrate with which the door base material was attached in that case, The instrument-panel substrate with which said epidermis and a door base material were attached is set to a foaming mold, and vehicle room back members are fabricated by making a foamed raw material pour in and foam between the epidermis 10 and an instrument-panel substrate.

[0021] The case where the epidermis which has a cleavage programmed part is fabricated to a substrate and one as an example of others of this invention is explained according to drawing 4 thru/or drawing 7. A substrate is beforehand fabricated by specified shape by injection molding etc., That by which section forming of the air bag door base portion was carried out to approximately U type or zygial by a slit, notch, etc. at some instrument-panel substrates although not illustrated, Or an air bag opening is formed in an instrument-panel substrate, and proper things, such as what was attached to this opening so that opening

and closing of an air bag door base were possible, are used.

[0022]First, as shown in (A) of drawing 4, the substrate arrangement process which holds the substrate 14 with which the breakthrough 15 for vacuum suction is formed to the mold face 31a of the vacuum forming type 30a is performed. The substrate 14 is arranged at the position of the vacuum forming type 30a, and is held in the mold face 31a. As for this breakthrough 15 for vacuum suction currently formed in the substrate 14, it is desirable to provide in the vacuum suction hole 35a currently formed in the mold face 31a of the vacuum forming type 30a, a corresponding position, and other proper positions. Adhesives are applied to the surface of the substrate 14 and the sheet for epidermis mentioned later enables it to paste it with the substrate 14.

[0023]Next, as shown in (B) of drawing 4, the heating process of the sheet 11a for epidermis is performed. Heat softening of the sheet 11a for epidermis is carried out by the heating method M of a heater etc., and it changes into the state in which size enlargement is possible. The thing of the same raw material as the above mentioned example and structure is being used for the sheet 11a for epidermis.

[0024]Subsequently, the size enlargement process of the sheet 11a for epidermis is performed. In a size enlargement process, carry out vacuum suction of the sheet 11a for epidermis which carried out heat softening to the substrate 14 surface of said vacuum forming type 30a, it is made to adsorb, and size enlargement is carried out to the shape of surface type of the substrate 14. A vacuum sucking device (not shown) leads to the vacuum suction breakthrough 15 of the substrate 14, and the vacuum suction hole 35 of the vacuum forming type 31a, Between the mold face 31a and the substrate 14 and between the substrate 14 surface and the sheets 11a for epidermis are decompressed by the operation of the device, the substrate 14 is adsorbed in the mold face 31a, and the sheet 11a for epidermis is adsorbed on the substrate 14 surface. The sheet 11a for epidermis carries out adhesion unification with the substrate 14 via the adhesives of the substrate 14 surface by this adsorption. It is a suction opening by which the numerals 33a lead to a vacuum forming type rest, and the numerals 34a lead to a vacuum sucking device.

[0025]Then, as shown in drawing 7 which expands (C) and its part of drawing 5, a pressing process with the processing edge 40a is performed. In this process, where suction holding of the substrate 14 and the sheet 11a for epidermis is carried out to said vacuum forming type 30a, The processing edge 40a is pressed like said example to the cleavage programmed part formation position of the epidermis in the surface of the sheet 11a for epidermis by which size enlargement was carried out, and the cleavage programmed part 20a which consists of a slot of section abbreviation V type is formed in a cleavage programmed part formation position. Suction holding of the substrate 14 and the sheet 11a for epidermis is carried out to the mold face 31a of the vacuum forming type 30a in that case, and further, since the substrate 14 and the sheet 11a for epidermis are carrying out adhesion unification, they can press the processing edge 40a in an exact position, without the epidermis 10a shifting, and can form the cleavage programmed part 20a in a fixed position. If the press with a processing edge is performed to the still soft sheet 11a for epidermis just behind size enlargement, even if it does not press strongly, the slot 21a will be formed, and the delicate thickness regulation of the cleavage programmed part 20a of thin meat will become easy.

[0026]Next, after shape immobilization of the sheet 11a for epidermis of said substrate 14 surface is carried out by forced cooling, as shown in (D) of drawing 5, the unmolding process removed from the mold face 31a of the vacuum forming type 30a is performed, and as shown in drawing 6, the trimming process of the garbage 16 is performed if needed. Thus, the epidermis 10a of the request which was united with the substrate 14 is obtained.

[0027]

[Effect of the Invention]At as mentioned above, the process of the vacuum forming for carrying out size enlargement of the epidermis according to the manufacturing method of the epidermis for which it has a cleavage programmed part for air bag doors of this invention, as illustrated and explained. In order to fabricate a cleavage programmed part using a processing edge, according to the excessive post process after epidermis shaping, it is not necessary to form a cleavage programmed part, cost can be held down, and efficiency also becomes good.

[0028]Since the cleavage programmed part is formed to the sheet for epidermis which carried out adhesion unification with the substrate at the time of vacuum forming. The position of the cleavage programmed part to a substrate can also be taken into consideration, epidermis can be unified, compared with what unifies epidermis and a substrate in the case of a post process, more, the molding position of a cleavage programmed part can be performed correctly, and work can also be done easily.

[0029]And according to this invention, since an expensive and complicated device like laser processing is not needed, it is economical. Since it presses with a processing edge where suction holding of the sheet for

epidermis is carried out to a vacuum forming type, and a cleavage programmed part is formed, at the time of cleavage programmed part formation, the sheet for epidermis does not carry out a position gap, but can form a cleavage programmed part in a position correctly.

[Translation done.]

* NOTICES *

JPO and INPIT are not responsible for any damages caused by the use of this translation.

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.**** shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1]It is a sectional view showing the heating process and size enlargement process at the time of the vacuum forming in one example of this invention.

[Drawing 2]It is a sectional view showing a pressing process and an unmolding process with a processing edge.

[Drawing 3]It is an expanded sectional view at the time of the press with a processing edge.

[Drawing 4]It is a sectional view showing the substrate arrangement process, heating process, and size enlargement process at the time of the vacuum forming in other examples.

[Drawing 5]It is a sectional view showing a pressing process and an unmolding process with a processing edge.

[Drawing 6]It is a sectional view showing a trimming process.

[Drawing 7]It is an expanded sectional view at the time of the press with a processing edge.

[Drawing 8]It is a perspective view showing the instrument panel in which the conventional cleavage programmed part was formed.

[Drawing 9]It is a sectional view in nine to 9 line of drawing 8.

[Description of Notations]

10 10a Epidermis

11 11a Sheet for epidermis

14 Substrate

15 Vacuum suction breakthrough

20 20a Cleavage programmed part for air bag doors

21 21a Slot

30 30a Vacuum forming type

31 31a Vacuum forming type mold face

40 41a Processing edge

41 Edge of a blade

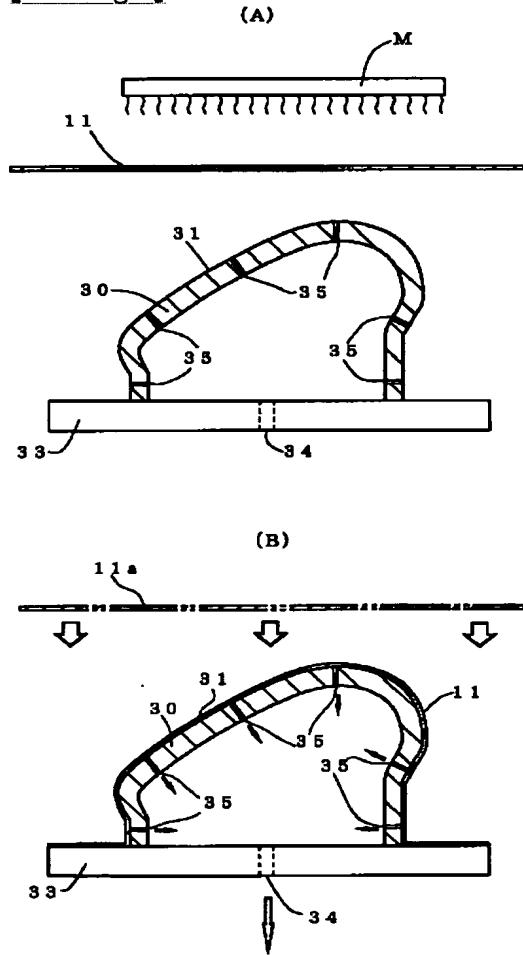
A Air bag

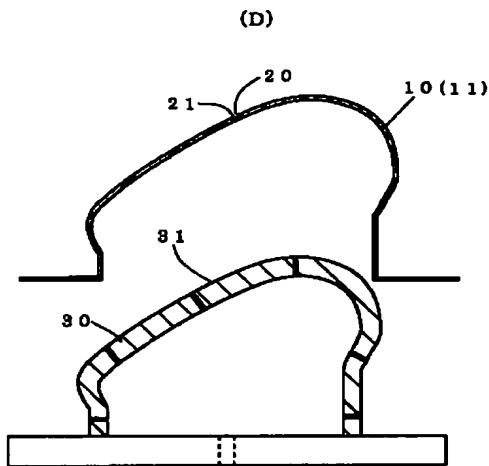
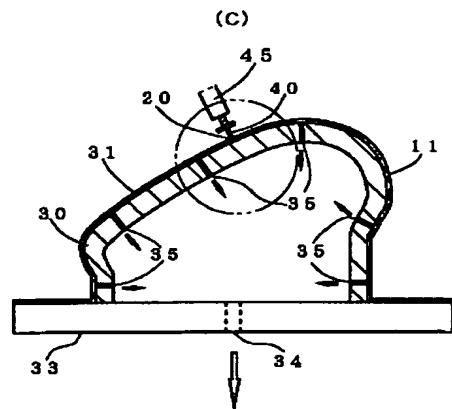
[Translation done.]

* NOTICES *

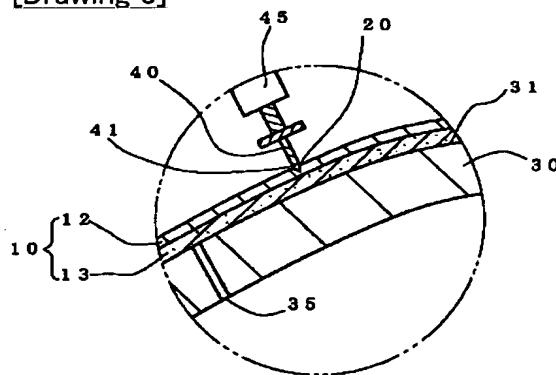
JPO and INPIT are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.**** shows the word which can not be translated.
3. In the drawings, any words are not translated.

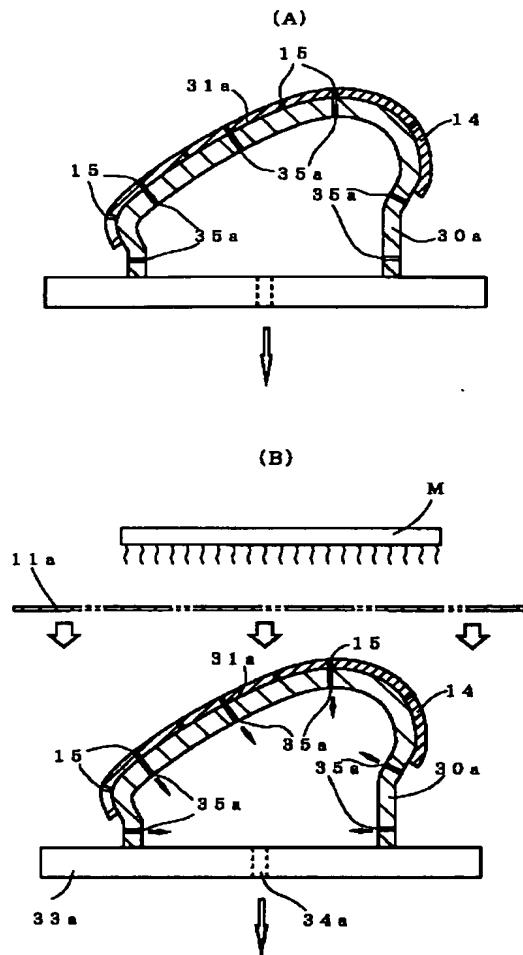
DRAWINGS**[Drawing 1]****[Drawing 2]**



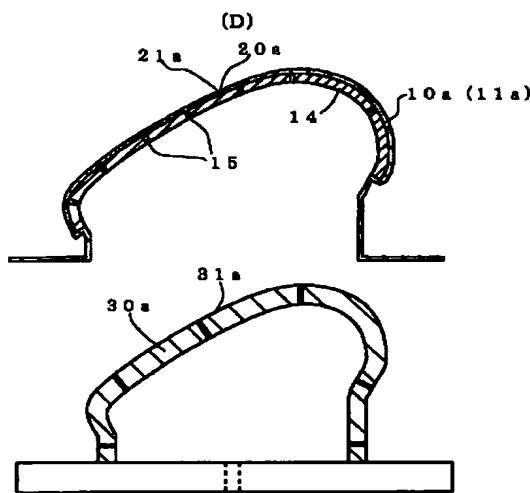
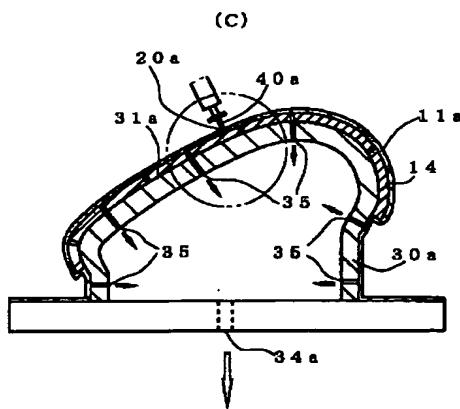
[Drawing 3]



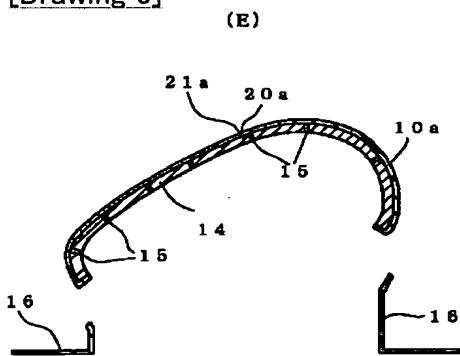
[Drawing 4]



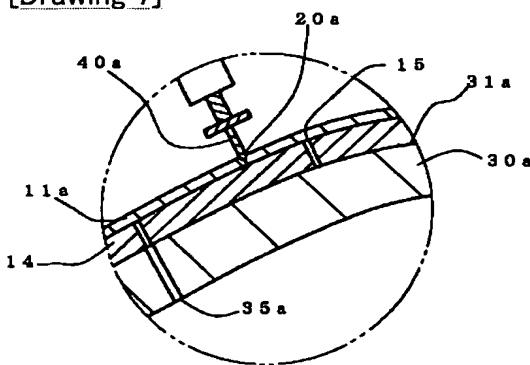
[Drawing 5]



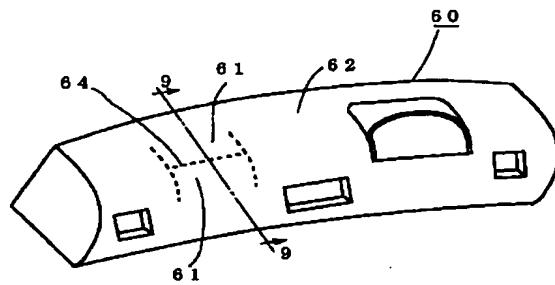
[Drawing 6]



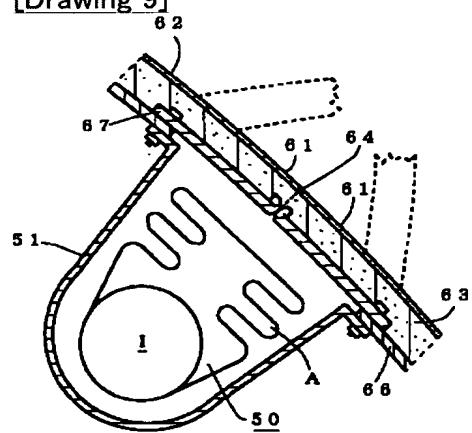
[Drawing 7]



[Drawing 8]



[Drawing 9]



[Translation done.]